

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously Presented) A liquid crystal display device comprising:
a switching element formed on a substrate;
a pixel electrode formed of a transparent conductive film, said electrode being connected to said switching element; and
a reflection layer comprising a dielectric multi-layer film, which is arranged in contact with said pixel electrode,
wherein said pixel electrode has a thickness of 50.5 nm to 88.4 nm, and said thickness is satisfied by the equation $nd = \lambda/4$, where n is a refractive index, d is a film thickness, and λ is a center wavelength.

2. (Previously Presented) A device according to claim 1, wherein a liquid crystal is sealed between a pair of substrates, said liquid crystal display device comprising said pixel electrode arranged in a matrix manner over one substrate, a thin film transistor connected to said pixel electrode, and a reflection layer.

3. (Previously Presented) A liquid crystal display device comprising a switching element formed on a substrate, a pixel electrode connected to said switching element, and a reflection layer,

wherein said pixel electrode is formed of a transparent conductive film, and

wherein said reflection layer comprising a dielectric multi-layer film is provided under said pixel electrode, and

wherein said pixel electrode has a thickness of 50.5 nm to 88.4 nm, and said thickness is satisfied by the equation $nd = \lambda/4$, where n is a refractive index, d is a film thickness, and λ is a center wavelength.

6433841 500 - 2500 Å^o
 505 - 884 Å^o

4. (Previously Presented) A device according to claim 3, wherein a liquid crystal is sealed between a pair of substrates, said liquid crystal display device comprises said pixel electrode arranged in a matrix manner over one of said pair of substrates, a thin film transistor connected to said pixel electrode, and a reflection layer.

5. (Previously Presented) A liquid crystal display device comprising a switching element formed on a substrate, a pixel electrode connected to said switching element, and a reflection layer,

wherein said switching element is connected to a capacitance,

wherein said capacitance comprising a common electrode formed of a transparent conductive film, a dielectric film formed on said common electrode, and said pixel electrode formed of a transparent conductive film formed on said dielectric film, and

wherein said reflection layer comprising a dielectric multi-layer film is provided below said common electrode

wherein said pixel has a thickness of 50.5 nm to 88.4 nm, and said thickness is satisfied by the equation $nd = \lambda/4$, where n is a refractive index, d is a film thickness, and λ is a center wavelength.

6. (Previously Presented) A device according to claim 5,

wherein said dielectric film comprises a dielectric material having a low refractive index, and

wherein said common electrode and said pixel electrode both comprises a conductive material having a high reflective index.

7. (Previously Presented) A device according to claim 5, wherein a liquid crystal is sealed between a pair of substrates, said liquid crystal display device comprises said pixel electrode arranged in a matrix manner over one of said pair of substrates, a thin film transistor connected to said pixel electrode, and a reflection layer.

8-9. (Canceled)

10. (Previously Presented) A method of manufacturing a liquid crystal display device, comprising the steps of:

- forming a switching element on a substrate;
- forming an interlayer insulating film over said switching element;
- forming a common electrode formed of a transparent conductive film over said interlayer insulating film;
- forming a dielectric multi-layer film on said common electrode; and
- forming a pixel electrode formed of a transparent conductive film on said dielectric multi-layer film to form an auxiliary capacitance comprised of said pixel electrode, said dielectric multi-layer film, and said common electrode.

11. (Original) A method according to claim 10, wherein said step of forming said dielectric multilayer film is performed by sputtering method or vacuum deposit method.

12-24. (Canceled)

25. (New) A liquid crystal display device comprising:

- a switching element formed over a substrate;
- a reflection layer formed over the switching element, said reflection layer comprising at least first, second, third and fourth laminated dielectric layers wherein each of the first and third dielectric layers comprises a material selected from the group consisting of SiO_2 , MgF_2 , Na_3AlF_6 , acrylic and polyimide, and each of the second and fourth dielectric layers comprises a material selected from the group consisting of TiO_2 , ZrO_2 , Ta_2O_5 , ZnS , ZnSe , ZnTe , Si , Ge and Y_2O_3 ; and
- a pixel electrode comprising a transparent conductive film on the reflection layer, wherein a thickness of said pixel electrode is within a range of 55.5 to 88.4 nm.

26. (New) A device according to claim 25, wherein said switching element is selected from the group consisting of a thin film transistor, a thin film diode, MIM device and varistor device.

27. (New) A liquid crystal display device comprising:

a switching element formed over a substrate;

a reflection layer formed over the switching element, said reflection layer comprising at least first, second, third and fourth laminated dielectric layers wherein each of the first and third dielectric layers comprises a material selected from the group consisting of SiO_2 , MgF_2 , Na_3AlF_6 , acrylic and polyimide, and each of the second and fourth dielectric layers comprises a material selected from the group consisting of TiO_2 , ZrO_2 , Ta_2O_5 , ZnS , ZnSe , ZnTe , Si , Ge and Y_2O_3 ,

wherein a thickness of said first and third dielectric layers is within a range of 70 nm to 122 nm and said second and fourth dielectric layers is within a range of 45.5 nm to 79.5 nm; and

a pixel electrode comprising a transparent conductive film on the reflection layer.

28. (New) A device according to claim 27, wherein said first, second, third and fourth laminated dielectric layers are laminated in this order from a side of said substrate.

29. (New) A device according to claim 27, wherein a thickness of said pixel electrode is within a range of 55.5 to 88.4 nm.

30. (New) A device according to claim 27, wherein said switching element is selected from the group consisting of a thin film transistor, thin film diode, MIM device and varistor device.

31. (New) A liquid crystal display device comprising:

a switching element formed over a substrate;

an interlayer insulating film over the switching element;

a reflection metal film formed over the interlayer insulating film;

a reflection layer formed comprising a dielectric multilayer film formed over the reflection metal film; and

a pixel electrode comprising a transparent conductive film formed over the reflection dielectric layer wherein said reflection dielectric layer is interposed between said pixel electrode and said reflection metal film.

32. (New) A device according to claim 31, wherein said reflection layer comprising at least first, second, third and fourth laminated dielectric layers wherein each of the first and third dielectric layers comprises a material selected from the group consisting of SiO_2 , MgF_2 , Na_3AlF_6 , acrylic and polyimide, and each of the second and fourth dielectric layers comprises a material selected from the group consisting of TiO_2 , ZrO_2 , Ta_2O_5 , ZnS , ZnSe , ZnTe , Si , Ge and Y_2O_3 ;

33. (New) A device according to claim 31, wherein a thickness of said pixel electrode is within a range of 55.5 to 88.4 nm.

34. (New) A device according to claim 31, wherein a thickness of said first and third dielectric layers is within a range of 70 nm to 122 nm and said second and fourth dielectric layers is within a range of 45.5 nm to 79.5 nm.

35. (New) A device according to claim 31, wherein said reflection metal film comprises aluminum, silver, rhodium, nickel and an alloy containing those as the main component.

36. (New) A device according to claim 31, wherein said switching element is selected from the group consisting of a thin film transistor, thin film diode, MIM device and varistor device.

37. (New) A liquid crystal display device comprising:
a semiconductor substrate;
an interlayer insulating film over the semiconductor substrate;
a reflection dielectric layer comprising a dielectric multilayer film over the interlayer insulating film,

wherein said reflection dielectric layer comprising at least first, second, third and fourth laminated dielectric layers wherein each of the first and third dielectric layers comprises a material selected from the group consisting of SiO_2 , MgF_2 , Na_3AlF_6 , acrylic and polyimide, and each of the second and fourth dielectric layers comprises a material selected from the group consisting of TiO_2 , ZrO_2 , Ta_2O_5 , ZnS , ZnSe , ZnTe , Si , Ge and Y_2O_3 ; and

a pixel electrode comprising a transparent conductive film on the reflection layer, wherein a thickness of said pixel electrode is within a range of 55.5 to 88.4 nm.

38. (New) A liquid crystal display device comprising:

a semiconductor substrate;

an interlayer insulating film over the semiconductor substrate;

a reflection dielectric layer comprising a dielectric multilayer film over the interlayer insulating film,

wherein said reflection dielectric layer comprising at least first, second, third and fourth laminated dielectric layers wherein each of the first and third dielectric layers comprises a material selected from the group consisting of SiO_2 , MgF_2 , Na_3AlF_6 , acrylic and polyimide, and each of the second and fourth dielectric layers comprises a material selected from the group consisting of TiO_2 , ZrO_2 , Ta_2O_5 , ZnS , ZnSe , ZnTe , Si , Ge and Y_2O_3 ,

wherein a thickness of said first and third dielectric layers is within a range of 70 nm to 122 nm and said second and fourth dielectric layers is within a range of 45.5 nm to 79.5 nm; and

a pixel electrode comprising a transparent conductive film on the reflection layer.

39. (New) A device according to claim 38, wherein said first, second, third and fourth laminated dielectric layers are laminated in this order from a side of said substrate.

40. (New) A device according to claim 38, wherein a thickness of said pixel electrode is within a range of 55.5 to 88.4 nm.

41. (New) A liquid crystal display device comprising:

a semiconductor substrate;

an interlayer insulating film over the semiconductor substrate;

a reflection metal film formed over the interlayer insulating film;

a reflection layer formed comprising a dielectric multilayer film formed over the reflection metal film; and

a pixel electrode comprising a transparent conductive film formed over the reflection dielectric layer wherein said reflection dielectric layer is interposed between said pixel electrode and said reflection metal film.

42. (New) A device according to claim 41, wherein said reflection layer comprising at least first, second, third and fourth laminated dielectric layers wherein each of the first and third dielectric layers comprises a material selected from the group consisting of SiO_2 , MgF_2 , Na_3AlF_6 , acrylic and polyimide, and each of the second and fourth dielectric layers comprises a material selected from the group consisting of TiO_2 , ZrO_2 , Ta_2O_5 , ZnS , ZnSe , ZnTe , Si , Ge and Y_2O_3 .

43. (New) A device according to claim 41, wherein a thickness of said pixel electrode is within a range of 55.5 to 88.4 nm.

44. (New) A device according to claim 31, wherein a thickness of said first and third dielectric layers is within a range of 70 nm to 122 nm and said second and fourth dielectric layers is within a range of 45.5 nm to 79.5 nm.

45. (New) A device according to claim 41, wherein said reflection metal film comprises aluminum, silver, rhodium, nickel and an alloy containing those as the main component.

46. (New) A device according to claim 41, wherein said reflection metal film is electrically floating.
